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Inequality as pollution, pollution as inequality

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The social-ecological nexus

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Beyond the social/ecological trade-off

Ecological crises born with the Anthropocene have arrived at a paradoxical juncture: as environmental degradations gradually become unbearable, environmental concern seems to become intolerable. One can think of two powerful forces at play behind this striking paradox sidestepping environmental emergency when it is most warranted.

The first one is structural: the environmentalist movement has not managed enough in the last four decades to embed ecological challenges in tangible social realities. Because of this failure, it now faces the risk of being reduced to what John Maynard Keynes called in a different context a "party of catastrophe", disseminating unbearable anxiety without offering solutions perceived as practicable by a majority of citizens. The irrational outcome of this situation is that environmental issues are likened by most citizens in developed countries to distant foreign policy problems while they are actually very much part of their daily lives, and will become omnipresent if not overwhelming in a matter of few decades (it is even more true in developing and emerging countries).

The second force is more circumstantial: anemic economic recovery, sluggish job creation and widening social inequality all conspire in the on-going "great recession" in Europe and the US to minimize and even marginalize "long-term" environmental preoccupations in the face of "urgent" social needs. According to several opinion surveys in the US and the

[1] Bing Overseas Program in Paris and Stanford Environmental & Water Studies Program.
[2] Center for European Studies and Environmental Science and Public Policy Concentration.

European Union (EU), the protection of the environment has clearly taken a back seat in public opinion to economic growth[3].

The negative consequences of the aforementioned paradox of environmental emergency are not only ecological: the new and important social issues that ecological crises entail are for the most part left unaddressed, starting with climate change adaptation, which in no part of the world (nation, state or city) is up to the challenge, yet now virtually certain.

Is it thus of critical importance to understand and demonstrate that environmental challenges are truly social problems that arise largely because of income and power inequality and can find their true resolution by putting forward justice principles and building good institutions.

Simply put, the "social-ecological approach" (Laurent, 2011a and 2012), which builds on the pioneer work of Elinor Ostrom (1990) and James Boyce (2002, 2013), offers two insights on this social-ecological nexus.

The first one is analytical: Social sciences hold the key to the solution of the severe environmental problems that "hard" sciences have gradually revealed over the last three decades, where research has developed exponentially. Humans have come to dominate earth systems thanks to the power of social cooperation. It is through the very same power that they will be able to save, not the planet, but the planet's hospitality to them. Much more resources should therefore be invested in social-ecological knowledge, that is in learning how to reform our social systems (which frame human attitudes and behaviors) in order to preserve our natural life-support system (climate, ecosystems, biodiversity) which undoubtedly finds itself in severe crisis[4].

The second insight is empirical: there is a strong, reciprocal and complex relation linking social justice and ecology. Social inequalities are among the most important causes of current environmental problems while contemporary ecological crises affect (and will affect even more in the near future) most severely the poorest and most vulnerable, in poor and rich countries alike.

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[3] One case in point is the Gallup survey that for the first time in three decades showed in March 2009 an inversion of respondents' priorities; in the last poll (2012), 48% of respondents gave the priority to economic growth over environment protection while 43% stated the opposite; in 1990, these proportions were respectively 19% vs. 71% and in 2007, still 37% vs. 55%. A strong case can of course be made that economic development (and job creation) are not in fact opposites.

[4] That was in fact the main research and policy avenue opened by the Millenium Ecosystems Assessment (2005).

Social inequalities are indeed important drivers of ecological crises: they increase the ecological irresponsibility of the richest in society and among nations, the demand for economic growth of the rest of the population, increase social vulnerability, lower environmental sensitivity and hamper the collective ability to organize efficiently to preserve natural capital.

But the reverse is also true: ecological crises create new forms of inequality. Structural "environmental inequalities" are rising in developed countries and developing countries alike, and they trigger dynamic social consequences. If left un-attended, they will place a considerable burden on public policy and the welfare state, where it exists. By the same token, "social-ecological" disasters, like the devastation caused by hurricane Katrina in 2005, are anything but natural: their cause is more and more human and their impact is determined by social factors like development, inequality and democracy.

This paper briefly reviews three practicable ways to make visible this growingly apparent and acknowledged[5] link between social issues and environmental challenges, and more precisely the relationships between social inequality and environmental crises. To frame its general argument in the language of sustainability science, it is concerned with the combination and even complementarity of natural and social capital[6].

First, it purports to show that social inequalities play a key role in our ecological crises. Conversely, environmental inequalities are the new face of social injustice and should thus become the new frontier of social policy. Finally, the social-ecological nexus can become a leverage to address/redress political inequality, particularly in the emerging world (the case of China is highlighted). The inequality and ecological crises that have developed in the last thirty years are often juxtaposed, this paper attempts to articulate them.

[5] See for instance workshops and publications by The European Trade Union Confederation (ETUC). http://www.etuc.org/r/27

[6] The traditional question in ecological economics being that of the substitutability between natural and physical or manufactured capital.

How inequality pollutes our planet: Five macro-ecological channels

While there are many good reasons to want to preserve democracies and aspiring democracies from their corruption by inequality, the environmental reason may be as fundamental as it is overlooked.

This environmental dimension of the contemporary inequality crisis can be first understood at the micro-ecological level, i.e. considering the behavior of rich and poor in isolation. Of the rich' side, Thorstein Veblen tells us that the desire to imitate the lifestyles of the wealthy upper class can lead to a cultural epidemic of environmental degradation in the middle class ("conspicuous consumption", in the trivial form of desiring, acquiring and displaying bigger cars or larger houses, brings environmental degradations by imitation).

Of the side of the poor, Indira Gandhi, the only head of state in attendance[7] at the first international environmental summit in Stockholm in 1972, taught us in her speech that "poverty and need are the biggest polluters". Poverty is indeed leading in the developing world to unsustainable environmental degradations dictated by social emergency (see TEEB, 2011 and Barrett, Travis and Dasgupta, 2011). These degradations, such as the dramatic depletion of forest cover in Haiti or Madagascar, are the product of a losing trade-off between present and future welfare: natural capital being the true wealth of much of the world's poor, its depletion, for lack of access to other forms of capital (manufactured and human), translates into their eventual further impoverishment. The eradication of poverty is thus also an ecological cause, provided it is not seen as a mere game of consumerist catch-up, but part of a redefinition of comprehensive wealth, its components and indicators (World Bank, 2010).

It is even more interesting to consider the macro-ecological dimensions of the social-ecological nexus, and to figure out the dynamic interactions between rich and poor.

Boyce (2002, 2013) has convincingly argued in a series of papers and books that a political economy dynamic lies behind environmental degradations: "Without winners - people who derive net benefit from the activity, or at least think that they do - the environmentally degrading activities would not occur. Without losers - people who bear net costs - they would not matter in terms of human well-being". Winners are able to impose the cost of those degradations on losers, says Boyce, for three main reasons: because losers are not yet born,

[7] With the exception of host Olof Palme.

because they ignore the real consequence of those degradations, because they don't have enough power to limit them.

I consider here five macro-ecological channels though which rich and poor interact in environmental degradations, crises and policies.

1) Inequality increases the need for environmentally harmful and socially unnecessary economic growth

This first mechanism is intuitive: if wealth accumulation in a given country is increasingly captured by a small fraction of the population, the rest of the population will need to compensate for that capture with additional economic development. The need for economic growth will be inflated by inequality. As Paul Krugman once nicely put it: "here's a radical thought: if the rich get more, that leaves less for everyone else"[8].

Since virtually no country in the world has managed to decouple (in absolute and net terms) economic growth from its negative environmental impact (for instance CO2 emissions[9] or waste) and natural resources consumption (only relative decoupling has been achieved in terms of material intensity of growth), more economic growth currently means more of both 'bads", whether locally or globally.

The situation of the United States during the most recent period provides a clear illustration of this point: data produced by Emmanuel Saez and Thomas Piketty for the 1993-2011 period indicate that one percent of the U.S. population has managed to capture seventy-five percent of economic growth. A better distribution of income would have also reduced the total growth necessary to meet the needs of the vast majority of Americans: an even distribution of income growth in 2010 would have actually lead to a decline in CO2 emissions in the US (see Box 1).

[8] Paul Krugman, "For Richer", *The New York Times Magazine*, 20 October 2002.
[9] Absolute decoupling of GDP growth and CO2 emissions has actually been achieved in a number of countries over certain periods of time, but only on the basis of production or territorial emissions. Once the global ecological impact of their economic development is taken into account (i.e. "net decoupling"), only relative decoupling remains.

Box 1. Reducing both local inequality and global pollution in the US

According to the Piketty-Saez database, average income (real income, including capital gains) grew from 2009 to 2010 on average by 2,09% in the US economy, more precisely, income on average was 52 005$ in 2009 and grew to 53 091$ in 2010. But this income growth was far from even: the top 1% saw their income grow by close to six times the national average.

Actually, 100% of income growth was distributed as -21,8% for the bottom 90% of the population (which income declined by -0,85%) and + 121,8% for the top 10% of the population (which income grew by 5,47%).

Between 2009 and 2010, energy-related CO2 emissions grew from 5 429 to 5 607 (in billion metric tons CO 2), or by 3.3% (illustrating the very strong correlation between economic growth and CO2 emissions). Income growth in the US economy in fact translates into more CO2 emissions in the atmosphere (e.g. housing, mobility, etc), the reverse being as well true.

Suppose that, instead of the uneven income growth witnessed, income inequality had been kept at its 2009 level in 2010. Stabilizing income inequality would have meant an even increase of both bottom 90% and top 10% income, for instance a growth of 2% of income for both groups (about the same as the national average growth of income). In this case, because the decline in “captured growth” for the top 10% exceeds the increase in “shared growth” for the 90%, emissions would have fallen from 5 607 to 5 602 bn tons, or a reduction of 1%.

The same is true over the 1990-2010 period (1990 being the reference date for most greenhouse gas emissions in the 1997 Kyoto Protocol). From 1990, the US economy witnessed an average growth of income of 8%, distributed as 25% for the top 10% and -5% for the bottom 90% over the period, with a corresponding growth of CO2 emissions of 8%. With a growth of 8% both for the top 10% and the bottom 90%, and for arithmetic reasons previously stated, emissions would have fallen by 1% (an almost 10 percentage points improvement compared to the actual US climate performance since 1990).

In this very simple case, merely stabilizing income inequality lessens the environmental damage stemming from economic growth while reducing inequality would reduce it even more.

2) Inequality increases the ecological irresponsibility of the richest, within each country and among nations

Widening inequality exacerbates the fundamental tendency of capitalist enterprises to maximize profits by externalizing cost at the national and international level and to turn socially deprived areas into "pollution havens" (the exponential growth of the financial sphere in the last decades has even shortened the time horizons and relative indifference to natural assets and their long term depletion that capitalist profit maximization entails).

As the gap between rich and poor grows, it becomes easier to transfer the environmental damage of the activity of the richest (individuals and countries) to the poorest. Income and power inequality tend to dissociate polluters from payers and thus act as a disincentive for ecological responsibility or as an accelerator of ecological irresponsibility.

On the consumption side, richest consumers face a paradox: they declare in surveys caring more about the environment than the poor and are indeed (according to the same surveys) more likely to adopt the best environmental practices or favor ambitious environmental policy, but they also pollute more than the poor in volume because of their higher income and lifestyle are more able to protect themselves from the negative impact of their behavior.

Widening inequality are therefore likely to increase simultaneously the demand for a better environment of the richest (environment is a normal good which demand increases with income) and their ability to acquire this good at a lower cost by transferring all corresponding environmental damages to the poorest (one example is how water is currently being diverted in Spain from small agricultural exploitations to large coastal tourist facilities that use water for recreational purposes while drought is becoming structural in the inland: wealthy tourists enjoy water as a natural amenity and are able to transfer the cost of its abduction and stress to growingly impoverished farmers).

On the production side, a company might be faced with two essential options to reduce the environmental cost of its production. On the one hand, it can try to adopt the best available technology and reduce the environmentally harmful impact of its production, a decision that can entail a high economic cost at least in the short run. On the other hand, it can seek to minimize the economic cost of the compensation that might be demanded and imposed by

public authorities for the damage caused by its production. Income and power inequality will heavily tilt the company towards locating its damaging production in a socially deprived area (within or outside the boundaries of its country of origin), where people have low incomes and weak political mobilization capacities: first, because the willingness to pay for environmental quality will be lower (compensation of any environmental damage will accordingly also be minimized); secondly, because the risk of a collective action resisting the damaging production will be limited by the feeble political capability of residents.

These two mechanisms apply internationally: Western societies are less likely to reduce their greenhouse gas emissions because they have little economic incentives to do so as they are better able to adapt to the most devastating effects of climate change; the reverse is true for low income countries which contribute little to global emissions but will pay the highest human price for the coming destructive climate (the most striking example of this global injustice may be Africa, which accounts for less than 3% of global emissions and where water stress due to climate change could threaten the well-being of up to 600 million people in coming decades). This also explains why international inequality results in tragic but at their core very human environmental disasters like the chemical pollution in Bhopal in December 1984 or the current degradation of the Niger Delta, both linked to power and income international inequality.

These mechanisms could also account for the striking disparity in biodiversity preservation around the world, as measured by the WWF's Living Planet Index (WWF, 2012). The index has fallen from close to 30% globally in the last four decades, but very unevenly: it has actually increased in developed countries by 7% (from 1990 until 2008) while it has plummeted by 31% in middle-income countries and by 60% in low-income countries. According to the WWF, geographic factors only explain a fraction of the difference. There are strong reasons to believe that here also international inequality plays an important role: richer countries are apparently able to preserve their biodiversity and at the same time exploit the biodiversity of natural capital-rich but income-deprived countries (this is an international extension of the poverty traps-biodiversity nexus mentioned above).

According to the WWF (2012), this social-ecological spiral is "potentially catastrophic": "not just for biodiversity but also for the people living there". "While everyone depends ultimately on the biodiversity that provides ecosystem services and natural assets, the impact of environmental degradation is felt most directly by the world's poorest people, particularly by

rural populations, and forest and coastal communities. Without access to land, clean water, adequate food, fuel and materials; vulnerable people cannot break out of the poverty trap and prosper"[10].

By the same token, the overall ecological impact of a region like the EU, which has the highest deficit of the world's continents in terms of physical trade balance (tracking the imports and exports of raw materials and energy), is accurately measured by taking into account the damage it is doing outside of its territory, in less wealthy countries that bear an important part of the environmental burden of the EU's economic development.

3) Inequality, which affects the health of individuals and groups, diminishes the social-ecological resilience of communities and societies and weakens their collective ability to adapt to accelerating environmental change

A substantial body of research has confirmed the negative impact of social inequality on physical and mental health at the local and national level (Richard Wilkinson and Michael Marmot can be credited to have opened this avenue of research, now widely pursued in governmental and international institutions).

Parallelly, the concepts of social (and even social-ecological) resilience and vulnerability have gained momentum and are now common currency in environmental science. In particular, vulnerability to "natural" disasters is often described as the result of exposure and sensitivity to a given shock (these two elements constituting the potential impact of the disaster on an individual or a community) on the one hand, and adaptation capacity and resilience on the other (resilience in a broad sense referring to the ability of a system to tolerate a shock and then returning to equilibrium without an alteration of its fundamental functions).

On each of those terms of the "vulnerability equation" (exposure + sensitivity - adaptation - resilience), inequality has a negative effect: inequality truly acts as a multiplier of the social damage caused by environmental shocks, for developed and developing countries alike (the social gradient in health being universal).

[10] Two recent empirical studies have linked biodiversity loss to income inequality, see Mikkelson (2007) and Holland (2010).

The Marmot review (Marmot, 2010) argues convincingly in that vein for the British case study that health is to be correctly understood in its social and thus environmental context[11]. Paul Farmer has highlighted in numerous articles and books how inequality is the underlying driver of many diseases perceived as natural or biological in the developing world. For Farmer, "inequality itself constitutes our modern plague," and even more to the point, he writes "inequalities and outcomes [I describe] are, by and large, biological reflections of social fault lines."[12]

4) Inequality hinders collective action aimed at preserving natural resources

According to the "logic of collective action" (the classic theoretical framework formulated by Mancur Olson), a small group of wealthy individuals, convinced that they are the ones who will receive the greatest benefit for environmental protection, would be ready to pay the high cost of ambitious environmental policies. The (few) richest, the argument goes, have a logistic comparative advantage over the many (poor). A larger group of people, whose revenues would more heterogeneous, would not be able, in Olson's perspective, to find ways to effectively organize to protect the environment.

This framework, which suggests that inequality is actually favorable to the preservation of natural resources, has been proven wrong both theoretically[13] and empirically[14]. A number of studies have shown that inequality is in fact adverse to the sustainable management of common resources, disrupting, demoralizing and disorganizing human communities[15]. The work of the late Elinor Ostrom has been instrumental in showing that good institutions that

[11] The government commissioned report concludes that reducing health inequalities requires to "Give every child the best start in life, Enable all children, young people and adults to maximise their capabilities and have control over their lives, Create fair employment and good work for all, Ensure healthy standard of living for all, Create and develop healthy and sustainable places and communities and Strengthen the role and impact of ill-health prevention."

[12] See studies from the WHO on "preventable burden" of diseases, especially Prüss-Üstün and Corvalán (2006) and also Margai (2010).

[13] Baland J-M.and Platteau J-P (1997).

[14] Klooster (2000).

allow communities to preserve resources essential to their long-term well-being are, contrary to what the logic of collective action suggests, based on principles of reciprocity and fairness.

Yet, critics of the Ostromian framework - that so eloquently shows how the "tragedy of the commons" envisioned by Garrett Hardin (1968) is in fact avoided on a daily basis by well-organized and regulated communities around the globe - make one important point: if it applies well to local contexts, it is difficult to extrapolate.

Therefore the negative impacts of inequality on environmental decision-making at the national level should also be considered. The contemporary United States provides a useful illustration in this respect. Inexorably, in the 1980s and 1990s, the US has retreated from the ecological world stage, gradually and de facto transferring the role which was his in the 1970s of global environmental leader to the European Union. The development of income inequality and its political repercussion might provide a useful explanation to this evolution.

The reason is quite simple: environmental policy-making requires a broad consensus that transcends party boundaries ("bipartisanism"). This bi-partisan cooperation has gradually become problematic due to the joint increase of income inequality and political polarization over the last thirty years. It is now almost impossible to enact ambitious legislations of the caliber of those of 1970s, that became a model for other nations (while the EPA was formed in 1970, at the beginning of the golden American decade for environmental legislation, it is now extremely difficult even to confirm its Director, for lack of bi-partisanship in Congress).

McCarty, Poole and Rosenthal (2008) have showed how income inequality and political polarization are in fact related, and on the basis of their work we can see how environmental policy can be considered as one of the many policy casualties of this dynamic between inequality and polarization (that they call a "dance"). The 2000 decade was especially disastrous in terms of political radicalization and deepening inequalities and, quite logically, in terms of environmental policy, both domestically (e.g. the devastation of Appalachian mountains) and globally (e.g. climate change negotiations sabotaging).

[15] See for instance Andersson and Agrawal (2011).

There is finally a global dimension to this mechanism, recent research showing that "support is higher for global climate agreements that distribute costs according to prominent fairness principles". [16]

5) Inequality reduces the political acceptability of environmental preoccupations and the ability to offset the potential socially regressive effects of environmental policies

Surveys shedding light on the political economy of environmental policies (Serret and Johnstone, 2006) show that such policies are generally perceived to be socially regressive, which they in fact can be.

In a society where poverty and economic insecurity are increasing, the legitimacy of environmental concern will decline...naturally. Growing relative and absolute inequality (poverty) translate into a lesser acceptability of short-term social sacrifices for long-term (social-ecological) benefits.

The failure of France to adopt a carbon tax in 2009/2010 provides an illustration of this argument (Laurent, 2010). The socially regressive effect of the tax was obvious, as the poorest French households pay out a higher share of their income on energy (2.5 times more for the bottom 20% than for the top 20%). Unsurprisingly, polls reported that as much as 66% of the French were opposed to the carbon tax, mostly on economic ground, with a sharp division between lower income social categories and higher income. The government eventually decided to abandon the project in March 2010 after a gruelling political defeat in the context of rising unemployment and poverty, with polls showing that 69% of French citizens thought it was the right thing to do.

This problem of political acceptability is further reinforced by the public budget constraint created by growing inequality. Inequality makes it more complex and costly, if not impossible, to implement effective compensation mechanisms to counteract possible regressive effects of certain environmental policies. Yet, social compensation for instance of carbon taxes is of primary importance for their political acceptability, and even their economic efficiency for that matter (all countries and localities that have adopted carbon taxes

[16] Bechtel and Scheve (2013).

over the last two decades have also adopted compensation mechanisms for households and firms, such mechanisms explain why Sweden was able to smoothly implement and maintain a carbon tax in the 1990s, which rate now exceeds 100 euros per ton of CO2).

Injustice in cycle: linking environmental and social inequalities

While the impact of inequality on environmental crises and degradations may be harder to grasp, the more intuitive reverse relation is easier to understand and explain. Environmental conditions determine well-being via health. The fundamental concern of environmental justice scholarship and activism is, simply put, that a public policy arsenal or a welfare state aiming at social fairness that would not take into account environmental conditions would fail in a critical way. The environment, in severe crisis, is thus a new object of justice and should accordingly become the new frontier for social policy. There are at least three dimensions to be explored on this side of the social-ecological nexus.

1) The rise of environmental inequalities

As contemporary ecological crises worsen, the threat to social justice posed by environmental inequalities rises. Those environmental inequalities can be understood to belong to four categories (Laurent, 2011b):

– Exposure and access inequalities: the unequal distribution of environmental quality between individuals and groups (defined in racial, ethnic and social terms), whether negatively (exposure to environmental nuisances, risk and hazard) or positively (access to environmental amenities: fuel poverty[17] can be understood as the result of unequal social access to the natural amenity that energy is);

[17] According to the most recent estimates, fuel poverty affects close to 8m households in a rich country like France (that is close to 13% of households). In the UK, where data have existed since the early 2000s, estimates show that fuel poor households have tripled since 2003, and represent in 2011 close to 15% of the population.

– Policy effect inequalities: the unequal effect of environmental policies, i.e. the unequal distribution not of environmental goods or bads, but of the income and social effect among individuals and groups of environmental public policy, for instance regulatory or tax policies related to greenhouse gas emissions;

– Policy-making inequalities: the unequal access to environmental policy-making, i.e. the unequal involvement and empowerment of individuals and groups in decisions regarding their immediate environment;

– Impact inequalities: the unequal environmental impact of different individuals and social groups related to their income and/or lifestyles.

Those various environmental inequalities can dynamically morph into social inequalities whether institutionally (via institutions) or critically (in time of disaster).

2) Nurturing injustice: from environmental inequalities to social inequalities via institutions

The dynamic combination of the environmental and social dimension of inequality can produce arresting outcomes. Studies on the effects of air pollution in the Los Angeles are for instance connecting exposure to atmospheric pollution and school performance through the impact of respiratory diseases developed by children (e.g. asthma)[18].

More staggering still, the results obtained by Janet Currie, who unveils the social-ecological perpetuation of poverty: children from poor families, Currie's studies show, are more likely to be born in poor health due to the polluted environment experienced by their mother during her pregnancy, resulting in poor educational attainment and eventually lower income and lower social status. Injustice is then perpetuated in cycle, from environmental inequalities to social inequalities.

[18] See for instance Pastor, Morello-Frosch and Sadd (2006).

3) Social-ecological disasters (the revenge of Rousseau)

In the aftermath of the 1755 Lisbon earthquake, French philosophers Rousseau and Voltaire started a fiery and eventually bitter argument over whom or what was to be held responsible for the disaster (killing close to a hundred thousand people): Voltaire blamed divine Providence while Rousseau blamed humans' inconsequence (the human concentration in cities prone to disasters).

Current developments give increasing weight to Rousseau's view: social factors do play a crucial role in our so-called "natural" disaster, which are truly "social-ecological". Increasingly, their causes (e.g. extreme climate events) and impact are determined by human societies (the most striking example of these humanly mitigated or worsened disasters being earthquakes). The social nature of "natural" disasters is obvious when one considers the eventual socially differentiated toll of the heat wave that struck Chicago in 1995, the hurricane that hit New Orleans in 2005 or the two similarly powerful earthquakes that devastated Haiti in 2010 and hit Japan in 2011.

Announced and virtually certain future disasters (especially heat-waves and floods) should therefore be collectively anticipated if local and national policy-makers wish to spare their citizens implacable injustice. In particular, the role played by structural environmental inequalities in critical social-ecological moments such as heatwaves or hurricanes should be better analyzed. The interaction between the two has been recently illustrated by the empirical observation that minority are much more exposed to the risk linked to urban heat island effect because their neighborhood lack tree cover or present too much impervious surfaces, such as asphalt and concrete .[19]

[19] African-Americans are 52 % more likely than whites to live in exposed neighbourhoods, Asians 32 % and Hispanics 21 %, see Jesdale, Morello-Frosch and Cushing (2013).

Nexus as leverage: the case of China

This link between inequality and the environment is not only a cause of concern and even alarm: it can also act as a powerful social and political leverage. The struggle for environmental justice in the United States has allowed the civil rights movement to acquire an even stronger social dimension. Similarly, in Europe, the recognition of environmental inequalities provides an opportunity for a thorough overhaul of social policy and a re-foundation of the welfare state (Laurent, 2011b). This is also true in the emerging world and China embodies better than any other developing country the ecological path to political progress.

There is an ecological continuity between the USSR and China: both illustrate how economic development without democratic counterweight can gradually lead to human underdevelopment through ecological un-sustainability.

The environmental crisis in China (and its health repercussion) is now well-documented, as is, increasingly, the inequality among Chinese when it comes to facing its impact. A recent paper found that public policy has lead to the loss of 2.5 billion years in life expectancy for 500 million residents of Northern China due to the un-checked increase in particulate matter pollution.[20]

This Chinese development un-sustainability, in which the explosion of social inequality since the early 1980s plays a role through the various mechanisms described in the first section of this paper, is a very real threat for the prospects of China's human development and is being increasingly recognized as such by Chinese leaders. In an essay posted online in February 2011, ahead of the National People's Congress, the current Environment Minister Zhou Shengxian argued that "In China's thousands of years of civilization, the conflict between humanity and nature has never been as serious as it is today…the depletion, deterioration and exhaustion of resources and the worsening ecological environment have become bottlenecks and grave impediments to the nation's economic and social development", "If our homeland is destroyed and we lose our health, then what good does development do?", he added.

If China can be compared to the 1980s' USSR with respect to its environmental improvidence, it can also be compared to the 1908s' US with regard to the development of the

20 Chen et al (2013).

environmental justice movement. According to Minister Zhou, more than 50,000 environmental protests occurred in 2005 alone (In 2010, the number of total reported protests reached 180,000, among which the massive and bloody protest in Guangxi province).

Two recent events suggest that the magnitude of Chinese environmental inequalities can open a breach of transparency in the country's political authoritarianism at the national and local level. First, Beijing authorities have recently started to inform the population of the alarming levels of air pollution in the city. This decision results from the combined pressure of residents fearing for their health and the U.S. Embassy, which, via Twitter[21], has for two years posted daily levels of particulate matters pollution. The other event is the recent publication of an updated list of "cancer villages" by the Chinese government, villages with abnormal prevalence of cancer resulting from environmental pollution (especially the pollution of the hydraulic system, degraded by the "industrial-rural sector").

Thirty years after its emergence in the United States, environmental justice has become in recent years a key issue in contemporary China. Could China accelerate its democratic transition thanks to ecology?

From environmental morality to ecological safety

The research on the critical, reciprocal and complex link between social inequality and ecological crises and degradations - the social-ecological nexus - is spreading, as evidenced by the United Nations Report on human development on this issue in late 2011 (United Nations Development Program, 2011). Among the many policy measures that would address this challenge, the design and implementation of social-ecological policies, integrating both dimensions (from taxation and health care to urban design and mobility) is a priority within the reach of politicians at all levels of government in developed, emerging and developing world. This new priority is all the more important that, as noted in the environmental inequalities typology presented above, environmental policy themselves create inequality.

[21] See https://twitter.com/BeijingAir

The social-ecological nexus essentially proposes to move away from “environmental morality” in order to make progress towards ecological safety: It suggests that ecology as a scientific discipline and political movement should not be devoted to blaming humans for their insults and injuries to Nature but focus on protecting them from the unfair consequence of their improvidence.

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